Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Preparation for International	)	IC Docket No. 94-31
Telecommunication Union World	)	
Radiocommunication Conferences	)	

REPLY COMMENTS OF PANAMSAT, L.P.

PanAmSat, L.P. ("PanAmSat"), by its attorneys, hereby submits reply comments in connection with the Notice of Inquiry ("NOI") concerning future World Radiocommunication Conferences ("WRCs"). After reviewing the initial comments filed in this proceeding, PanAmSat is concerned that proposals to locate feeder links for contemplated non-geostationary ("non-GSO") Mobile Satellite Services ("MSS") systems in the Fixed Satellite Services ("FSS") frequency bands, if implemented, could affect adversely existing and future geostationary ("GSO") FSS operations. Accordingly, PanAmSat urges the Commission to reject any position with respect to MSS feeder links that would jeopardize GSO FSS operations.

I. NON-GSO MSS FEEDER LINKS IN THE FSS SPECTRUM WOULD INTERFERE WITH GSO FSS OPERATIONS

As the Commission acknowledged in the NOI, "[c]urrent C and Ku-band FSS spectrum appears too congested to support non-GSO MSS feeder link requirements."[1] The C- and Ku- bands already are intensely and efficiently used and reused by GSO FSS systems. Transmissions between a non-GSO MSS satellite and its feeder link source, therefore, invariably would cause harmful interference to these FSS systems. Additionally, as GE American Communications, Inc. ("GE Americom") points out, given the number of proposed non-GSO MSS satellites, feeder link transmissions to and from these satellites would interfere with GSO FSS operations on a regular basis.[2]

Moreover, to safeguard the future development of FSS operations, the Commission also should reject proposals to allocate any portion of the FSS spectrum for use by non-GSO MSS systems until it is plainly demonstrated that such

[1] NOI at para. 23.
[2] Comments of GE Americom at 3.

systems will not interfere with GSO FSS operations. Due to heavy use of the C- and Ku- bands, GSO FSS operators have sought additional FSS spectrum in order to operate the next generation of FSS satellites. For example, in addition to the C- and Ku- bands, PanAmSat currently has on file applications to use a number of other portions of the spectrum presently allocated to FSS, including the Planned Bands and the Expansion Bands. Allowing non-GSO MSS systems to locate their feeder links in the FSS spectrum before they have demonstrated convincingly that these links will not disrupt present and future GSO FSS operations would thwart the continued development of FSS-based satellite services.

To date, billions of dollars have been invested in both existing and future GSO FSS systems. These systems provide essential global and regional communications services in a highly spectrum efficient manner. This substantial investment and the critical services provided by GSO FSS systems would be jeopardized were non-GSO MSS system operators permitted to use FSS spectrum for their feeder link transmissions.

A number of parties in this proceeding, relying on a recent finding of Task Group 4/5, conclude that harmful interference to GSO FSS operations from non-GSO MSS feeder links could be avoided by employing reverse band working techniques.[3] PanAmSat whole-heartedly rejects this conclusion. As discussed in the Engineering Statement of Philip A. Rubin (attached hereto as Exhibit A), reverse band working techniques have been discussed for a number of years, but these techniques are untested in practice.

While the Task Group maintains that it is feasible to locate non-GSO MSS system feeder links using reverse band sharing techniques in the FSS spectrum without causing harmful interference to GSO FSS operations,[4] as Mr. Rubin demonstrates in his statement, the Task Group's report relies on a number of incorrect technical assumptions. For example, contrary to the Task Group's findings, main beam to main beam satellite coupling will likely occur if non-GSO MSS systems are permitted to use the FSS spectrum on a reverse band sharing basis. Such coupling would cause significant interference to GSO FSS operations. Additionally, the Task Group failed to examine in a meaningful manner the

---

[3] See, *e.g.*, Comments of Ellipsat Corporation at 6; Comments of Loral/Qualcomm Partnership, L.P. at 7.
[4] Annex 1 to Report of Task Group 4/5, June 9, 1994, at 25.

problem of non-GSO MSS earth station interference into GSO FSS earth stations. While the Task Group concludes, nonetheless, that earth station to earth station interference can be kept within acceptable limits if the earth stations of the two services are separated by 100 to 300 km in C-band and 100 to 225 km in Ku-band,[5] such a separation requirement would create a wide area around each MSS feeder link earth station in which FSS stations could not be located. The inability to locate FSS stations in these areas would diminish significantly the usefulness of FSS operations.[6]

The Commission, therefore, cannot rely on reverse band sharing techniques to prevent interference to FSS satellites from non-GSO MSS system feeder links. In short, whether reverse band sharing can be used to avoid harmful interference to GSO FSS operations is too speculative at this time to risk the substantial investment in GSO FSS systems and the integrity of the essential services these systems provide.

II. RR 2613 SHOULD CONTINUE TO PRESERVE THE PRIMARY STATUS OF GSO SYSTEMS

PanAmSat agrees with Hughes Space and Communications Company and Hughes Communications Galaxy, Inc. (collectively, "Hughes") that the primary status of GSO services *vis-a-vis* non-GSO services, as currently set forth in ITU RR 2613, should be retained in the FSS spectrum.[7] As Hughes notes, a significant shortcoming of non-GSO systems is their inability to employ frequency reuse as efficiently as GSO systems.[8] Because the ability to use spectrum in an efficient manner is a central consideration in making frequency allocations, GSO systems should continue to have primary status over less efficient non-GSO systems. Hughes also points out that, in addition to their inability to employ efficient frequency reuse techniques, the dynamic nature of non-GSO systems and their associated operational characteristics also justify the retention of the primary status of GSO satellites in the FSS spectrum.[9]

---

[5] Id.

[6] Also, to the extent that non-GSO MSS operators intend to locate feeder links in the 4/6 GHz band using reverse band sharing techniques, such links will disrupt the operations of terrestrial users of that band.

[7] Comments of Hughes at 6.

[8] Id.

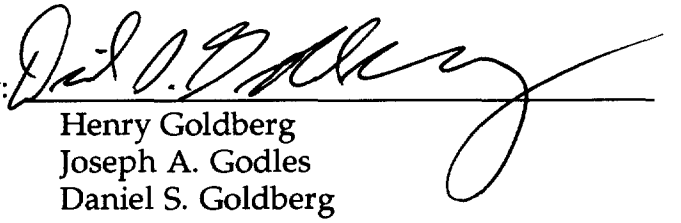
[9] Id. at 7.

III. CONCLUSION

For the foregoing reasons, the Commission should not endorse any measure at future WRCs that would permit non-GSO MSS systems to locate their feeder links in the FSS spectrum allocations. Additionally, as discussed herein, the Commission should support the retention of the primary status of GSO satellites *vis-a-vis* non-GSO satellites in the FSS spectrum.

Respectfully submitted,

PANAMSAT, L.P.

By: 

Henry Goldberg
Joseph A. Godles
Daniel S. Goldberg

GOLDBERG, GODLES, WIENER & WRIGHT
1229 Nineteenth Street, N.W.
Washington, D.C. 20036
(202) 429-4900

Its Attorneys

August 5, 1994

EXHIBIT A

STATEMENT OF PHILIP A. RUBIN

1. I am Chief Scientist of PanAmSat. I have more than thirty-five years of experience in the satellite communications industry having worked in that industry since 1959. I am a registered Professional Engineer in the District of Columbia and my experience is well known at the Federal Communications Commission.

2. I have reviewed the findings of the ITU Task Group 4/5 with respect to the feasibility of locating non-geostationary ("non-GSO") Mobile Satellite Service ("MSS") system feeder links in the Fixed Satellite Service ("FSS") frequency allocation using reverse band sharing techniques. The concept of reverse band sharing, which was first proposed more than twenty years ago as a possible means of achieving additional bandwidth for the FSS, is a fundamentally flawed concept — particularly when applied to frequency sharing between non-GSO MSS systems and GSO FSS systems.

The June 9, 1994, report of the ITU Task Group 4/5, which purports to demonstrate the feasibility of sharing between non-GSO MSS systems and GSO FSS systems in the FSS spectrum, is based on numerous incorrect technical assumptions. For example, Task Group 4/5 states that "[t]he worst case interference between non-GSO and GSO satellites will occur along the 'antipodal' path between two such satellites." Task Group Report at 2. However, the Report then incorrectly concludes that "... a worst case situation is not likely to appear, due to the actual discrimination of the satellites antennas. These antennas are usually designed to cover elevation angles greater than a minimum positive value... . Therefore, main beam to main beam satellite coupling should never appear." Id. However, contrary to the Task Group's conclusion, most receive beams on most commercial communications satellites provide considerable gain at the edge of the earth. Thus, main beam to main beam satellite coupling likely renders reverse band sharing an unworkable solution due to the potential for harmful interference between GSO FSS systems and non-GSO MSS systems operating in the FSS frequency allocations.

The Task Group also glosses over the problem of non-GSO MSS earth station interference into GSO FSS earth stations and simply concludes that earth station-to-earth station interference can be kept within acceptable limits if the earth stations of the two services are separated by 100 to 300 km in C-band and 100 to 225 km in Ku-band. Id. at 25. Even if this inadequately supported conclusion were true and the distances could be further reduced by site shielding, it effectively would create a wide area around each MSS feeder link earth station in which FSS stations could not be located. Such a limitation would severely undermine the usefulness of FSS operations.

Finally, to the extent that non-GSO MSS operators intend to locate their feeder links in the 4/6 GHz band, the Task Group's Report ignores the serious potential for harmful interference to terrestrial uses in that portion of the band that reverse band sharing by non-GSO MSS systems would inevitably cause. In short, if non-GSO MSS operators were allowed to locate their feeder links in the FSS spectrum on a reverse band sharing basis, significant interference to existing and planned 4/6 GHz terrestrial operations would be certain to occur.

In short, allowing non-GSO MSS systems to employ reverse band sharing techniques in the FSS spectrum would result in harmful interference to GSO FSS systems and, to the extent the 4/6 GHz band is used, to terrestrial operations. Accordingly, the Commission should resist all attempts to locate non-GSO MSS system feeder links in the FSS frequency allocations.

I declare under penalty of perjury that the foregoing is true and correct.

Philip A. Rubin